Note on a New Termitophilous Coleoptera found in Formosa (*Ziaelas formosanus*).

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With Plate VI.

Among the specimens of termitophilous insects collected by me during my studies on the Termites of Japan and Formosa, I have found a curious beetle which is apparently a very close ally of *Ziaelas insolitus* Fairmaire, but seems to be distinguishable from this species in some respects. I propose to call it *Ziaelas formosanus*.

The genus *Ziaelas* was established by Fairmaire[1] in 1892 as a new Tenebrionid genus, with the single species *Z. insolitus*. The genus and species were based on specimens obtained by M. A. Sallé at Hué, Annam. Subsequently the species was placed by Wasmann[2] under his new family, the Rhysopaussidae,[3] which constitutes a remarkable group of termitophilous Coleoptera. The species is also found included in the lists of the Rhysopaussidae, in the papers of Gestro,[4]

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[1] Fairmaire, L.; *Ziaelas* n. g. *insolitus* n. sp. Ann. Soc. Entom. France, LXI, 1892. Bull., pp. CX-CXI.

[2] Wasmann, E.; Neue Termitophilen und Termiten aus Indien. IV (Nachtrag). Ann. Mus. Civ. Genova, (2) XVII (XXXVII), 1896-97, pp. 149-152, fig. 1, a, b.

[3] The family Rhysopaussidae Wasmann [Ann. Mus. Civ. Genova, (2) XVI (XXXVI), 1896, p. 613) has been adopted by Fea [Ann. Mus. Civ. Genova, (2) XVII (XXXVII), 1896-97, p. 585], Gestro [Ann. Mus. Civ. Genova, (2) XX (XL), 1899, p. 743], [Ann. Mus. Civ. Genova, (3) V (XLV), 1911, p. 5], Fairmaire [Bull. Soc. Entom. France, 1900, No. 3, p. 45], Escherich [Die Termiten. Leipzig, 1909, p. 137], etc. Recently the group was treated of as a subfamily of the Tenebrionidae by Wasmann [Zeitschr. f. Wiss. Zool., Bd. 101, 1912, pp. 70, 82-84.]

[4] Gestro, R.; Un nuovo genere di Rhysopaussidae. Ann. Mus. Civ. Genova, (2) XX (XL), 1899, p. 748.

Wasmann,[1] etc. However, since it was first described by Fairmaire, no second record of its occurrence, nor the discovery of a form allied to it, seems to have been made in any part of the world. Unfortunately Fairmaire's description of the beetle is very brief and unsatisfactory. Nothing whatever about its ethology is mentioned. On the ground of Wasmann's studies, it is to be assumed that the species is probably a termitophilous insect.

As to the present species, *Z. formosanus*, three specimens were collected in 1911 by Prof. Watasé and myself at Kuraru, Ako District, Formosa. They were taken from the nest of *Odontotermes* (*Cyclotermes*) *formosanus*. The nest of this termite is situated about four feet below the surface of the ground and consists of a royal cell and many other cells containing each a round spongy fungus-bed.

From some cells of the latter kind, I have obtained three specimens of the beetle in question, together with numerous larvae of the termite. In organization the beetle shows several peculiar points which seemed to be the result of its life in the nest of the termite, as for instance the elongated eyes and degenerated hindwings. The insect was capable of but very sluggish movements.

Here I let follow a description of the species.

Ziaelas formosanus, n. sp.

Colour.—Dorsal surface dark reddish-brown and ventral surface somewhat lighter, as observed on specimens preserved in alcohol.

Head.—More or less longer than broad, divided by a constriction before the eyes into an anterior and a posterior part. Anterior part narrower than the posterior, subquadrate, with a short projection in front, the antero-lateral corner forming a large conspicuous tubercle, underneath which the antenna arises. On the forehead between the tubercles there runs a narrow longitudinal groove downwards. Posterior part of head also subquadrate, with slightly rounded lateral edges and slightly concave posterior margin (figs. 2, 3).

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[1] Wasmann, E.; Termitophilen aus dem Sudan. Results of the swedish Zoological Expedition to Egypt and the White Nile 1901 under the Direction of L.A. Jägerskiöld. No. 13, 1903, p. 6.

Antenna.—Rather long, longer than head and pronotum combined, submoniliform, 11-jointed; 1st joint very large, subcylindrical, nearly 1½ times as long as broad, narrow at base and broadening distally; 2nd joint the smallest of all, orbiculate; 3rd and 4th joints similar, about as long as broad; 5th-9th joints increasing slightly and gradually in breadth and assuming a more and more turbinate form in the more distally situated ones; 10th joint somewhat narrower than the preceding one; 11th joint equal to the last in breadth, with slightly obliquely truncated tip bearing fine spiny hairs on the surface (fig. 4).

Labrum.—Slightly arched, a little broader than long, subquadrate, slightly sinuate in front, obtusely rounded in the antero-lateral corners and straight on the sides. The margin bears short hairs, of which those on antero-lateral corners are on the whole the longest (fig. 5).

Eyes.—Distinctly separated from one another, very narrow, not projecting, black in colour, finely punctured as in other parts of the head but not facetted; so far as can be seen on the upper side of head, each eye presents a trasversely elongate reniform shape, being broadly emarginated in front. Seen on the sides of head it is narrower, shows slight backward curvature near inferior end (figs. 2, 3).

Mandibles.—Equal, strong, three-sided, a little longer than broad, reddish brown in colour except the acute incurved tip which is black, upper side slightly convex, outer side concave, lower side much more concave. Inner margin of mandible almost straight with a small notch-like concavity in the middle; outer margin much convex. At inner base there exists a subquadrate tooth-like process with finely serrate inner edge (figs. 6, 7).

Pronotum.—Much broader than head, nearly so long as broad, with anterior margin almost straight, antero-lateral margins broadly rounded, postero-lateral margins slightly converging posteriorly, and posterior margin slightly sinuate. Dorsal surface of pronotum slightly arched, finely punctured, with three pairs of longitudinal ridges, viz., a median pair formed of the longest ridges and two more pairs formed of antero-lateral and postero-lateral ridges on both sides of the median pair (fig. 8).

Prosternum.—With a moderately broad median ridge, anterior margin concave, posterior margin also concave but with a short pointed process in the middle (fig. 9).

Elytra.—The elytra in situ (fig. 1), about 2¼ times as long as broad, distinctly broader than pronotum; base gently arcuate and notched in the middle; lateral edges quite or nearly parallel in basal ⅗ of their length and then gently curving towards each other before they meet at the apex, giving to this part of the elytra an inverted dome-like outline and showing in this part only an obscure constriction-like depression of surface. Costa numbers ten on each side (fig. 11). The 1st costa forming the outer margin of each elytron is long; the 2nd also long, almost reaching to apex of elytron; the 3rd shorter than the 2nd but longer than the 4th, which is the shortest of all; the 5th longer than the 6th but shorter than the 7th, which is nearly as long as the 2nd; the 9th shorter than the 8th; the 10th long and forming the outer margin of elytron. Each inter-costal area is beset with a row of minute quadrate punctures with rounded corners.

Abdomen.—Dorsal integument soft, not so strongly chitinized as the ventral integument, brownish yellow in colour. Ventral surface rather flat, showing five segments, of which the 4th is the shortest (fig. 10).

Legs.—Compressed. First and second legs are of about the same length and structure; tibia shorter and narrower than femur, with very fine lateral and three large terminal spines; tarsus short, thick, diminishing in thickness towards the extremity, 5-jointed; the proximal four joints short; the 5th joint nearly as long as the preceding two joints combined, with two incurved claws (figs. 12, 13). Third leg much longer than the first or the second; tibia with two terminal spines; tarsus 4-jointed; the 1st joint longer than the 2nd or the 3rd, but shorter than the 4th which is equal in length to the 2nd and 3rd combined. The third leg exceeds the end of abdomen when stretched out posteriorly (fig. 14).

Sexual organs.—All the three specimens on hand are of the same appearance and structure. They are probably all males, as one of them proved to be on examination after laying out into sections. The internal male organ consists of testes, seminal ducts, seminal vesicles, accessory glands and ejaculatory duct. Of these parts, the seminal vesicles are the most conspicuous, being very voluminous convoluted tubes, occupying the greater part of the interior of abdomen. They are filled with filiform spermatozoa.

Measurements.—One of the specimens gave following measurements:

Length of body	8.0	m.m.
Length of head	1.1	,,
Breadth of head	1.03	,,
Length of antenna	3.0	,,
Length of labrum	0.37	,,
Breadth of labrum	0.57	,,
Length of pronotum	1.6	,,
Breadth of pronotum	1.6	,,
Length of elytra	5.5	,,
Breadth of elytra	2.5	,,

The two other specimens measured respectively 8 mm and 7.5 mm in body length.

Remarks.—In external characters, the present species agrees closely with the figure given by Wasmann (l.c.) of *Ziaelas insolitus*, but may be distinguished from this by the more fully rounded shape of the hind end of elytra, instead of this part being marked off from the more anterior parts by gentle constriction at sides. The 4th costa of elytron is shorter than any of the rest, but not so prominent as in the genus *Azarelius* Fairmaire.

Explanation of Plate VI.

Fig. 1. Dorsal view. × 6.
Fig. 2. Dorsal view of head. × 20.
Fig. 3. Side view of head. × 20.
Fig. 4. Left antenna. × 30.
Fig. 5. Labrum. × 50.
Fig. 6. Right mandible. × 50.
Fig. 7. Left mandible. × 50.
Fig. 8. Pronotum. × 20.
Fig. 9. Prosternum. × 20.
Fig. 10. Ventral view of mesothorax, metathorax and abdomen. × 20.
Fig. 11. Right elytron. × 20.
Fig. 12. First right leg. × 20.
Fig. 13. Second right leg. × 20.
Fig. 14. Third right leg. × 20.